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## ZOOLOGY.—*A new precious coral from North Borneo.*[1] FREDERICK M. BAYER, U. S. National Museum. (Communicated by FENNER A. CHACE, JR.)

The Octocorallia collected during the Philippine cruise of the U. S. Fish Commission steamer *Albatross* have as yet not been reported upon, but preliminary studies indicate that the collection is one of great interest, and the number of species represented will probably be considerable. Although the collection contains only a single precious coral, it has proved to be new. In order to provide a complete key to the Indo-Pacific Coralliums for another report in preparation, it becomes necessary to describe it at this time, in advance of a complete report on the Philippine collection.

Although this new *Corallium* was obtained off North Borneo, not a single specimen was secured in the nearby Philippine waters. The absence of precious corals from collections made in the Philippine Archipelago is probably due to the fact that tangles were not used in the dredging operations. Most species of *Corallium* inhabit rocky ground where standard dredges and trawls are ineffective in securing fixed organisms. Seale (1911, p. 305; 1917, p. 204) states that a few small specimens have been found on the beach at Mindanao; since several species are more or less abundant in Japan, and three are now known from the Moluccas and Borneo, it seems likely that *Corallium* will eventually be found more or less abundantly in the Philippine Archipelago.

### Corallium borneënse, n. sp.

*Diagnosis.*—*Corallium* branched on all sides; axis solid, striated, round except at twig tips where it is **X**- or **Y**-shaped in cross section; autozooids large, wartlike, set singly or in small groups, usually clustered on twig tips; siphonozooids minute, surrounding autozooids; coenenchyma papillate. Spicules: smooth double clubs, 6-, 7-, 8-radiates and crosses in both rind and verrucae; small rods with simple warts in verrucae only. Color in alcohol: rind salmon, verrucae flame scarlet (Ridgway, 1886, pl. 7); axis white with pink center.

*Type.*—U.S.N.M. no 49325, Sibuko Bay, British North Borneo: off Si Amil Island north 74° west, 5.4 miles (4°17′40″ N., 118°57′42″ E.), 292 fathoms, fine sand and green mud, bottom temperature 44.3°F. (*Albatross* station 5584, September 27, 1909).

*Description.*—The type is 5.5 cm in height, possibly only a branch of a large colony. The main axis is about 9 mm in diameter near the base, decreasing to 3.5 mm at the top. About 15 mm from the base there is a round hole 3 mm in diameter leading to a cavity within the stem; at the base of a branch 6 mm above the first hole there is a small but deep pit not connected with the axial cavity. These deformities were probably caused by a polychaete commensal. The axis is obscurely striated, round except at the twig tips where is is **X**- or **Y**-shaped in cross section. Branches are given off on all sides of the stem, projecting at right angles or inclined a little upward. The large branches irregularly subdivide into thick, clavate twigs which bear at their ends clusters of several autozooids; the small branches are mostly simple and of about the same calibre as the secondary twigs of the large branches. The autozooid calyces are low warts about 2 mm in diameter; very few occur on the main stem, but on the branches they are numerous, appearing singly or in groups of two or three, well separated. Twigs and branches terminate distally in a group of autozooids. There appears to be no predominance of autozooids on any one side; calyces may occur all around, or along any side. The siphonozooids are visible as small warts with simple orifices, often of a lighter color than the surrounding coenenchyma, situated around the bases of the autozooid calyces. The surface of the coenenchyma is papillate, but the character of the minute verrucae remains to be determined; it is possible that they also are siphonozooids, but

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more likely that they are only cnidal papillae. Unfortunately, the material at hand is not sufficient to permit the sectioning necessary to determine the answer, nor to investigate the canal system.

In spiculation *Corallium borneënse* is quite distinct. In both coenenchyma and verrucae the predominant form is the "double club" (Fig. 1, *b*, *c*, *j–m*), a highly modified sexradiate spicule with two of the arms greatly enlarged, forming a coalescent pair of spheroids (the club "heads"), two arms unmodified (forming the "handles" of the clubs), and the remaining two arms rudimentary, sometimes reduced to an inconspicuous irregularity of the spicule surface. Less common are the radiate forms with six (Fig. 1, *i*, *o*, *p*), seven (Fig. 1, *g*, *n*), or eight (Fig. 1, *f*) arms (imperfect forms are frequent among the radiate sclerites, such as the malformed octoradiate shown on Fig. 1, *q*), and simple crosses. Small rods with conical processes (Fig. 1, *e*) occur only in the calyces; this form seems to be derived from the multiradiate type by suppression of the arms.

*Corallium borneënse* is highly colored, the coenenchyma being nearest to Ridgway's "salmon" and the verrucae darker, approximating "flame scarlet." The white axis has a pink center.

*Remarks.*—The genus *Corallium* breaks down

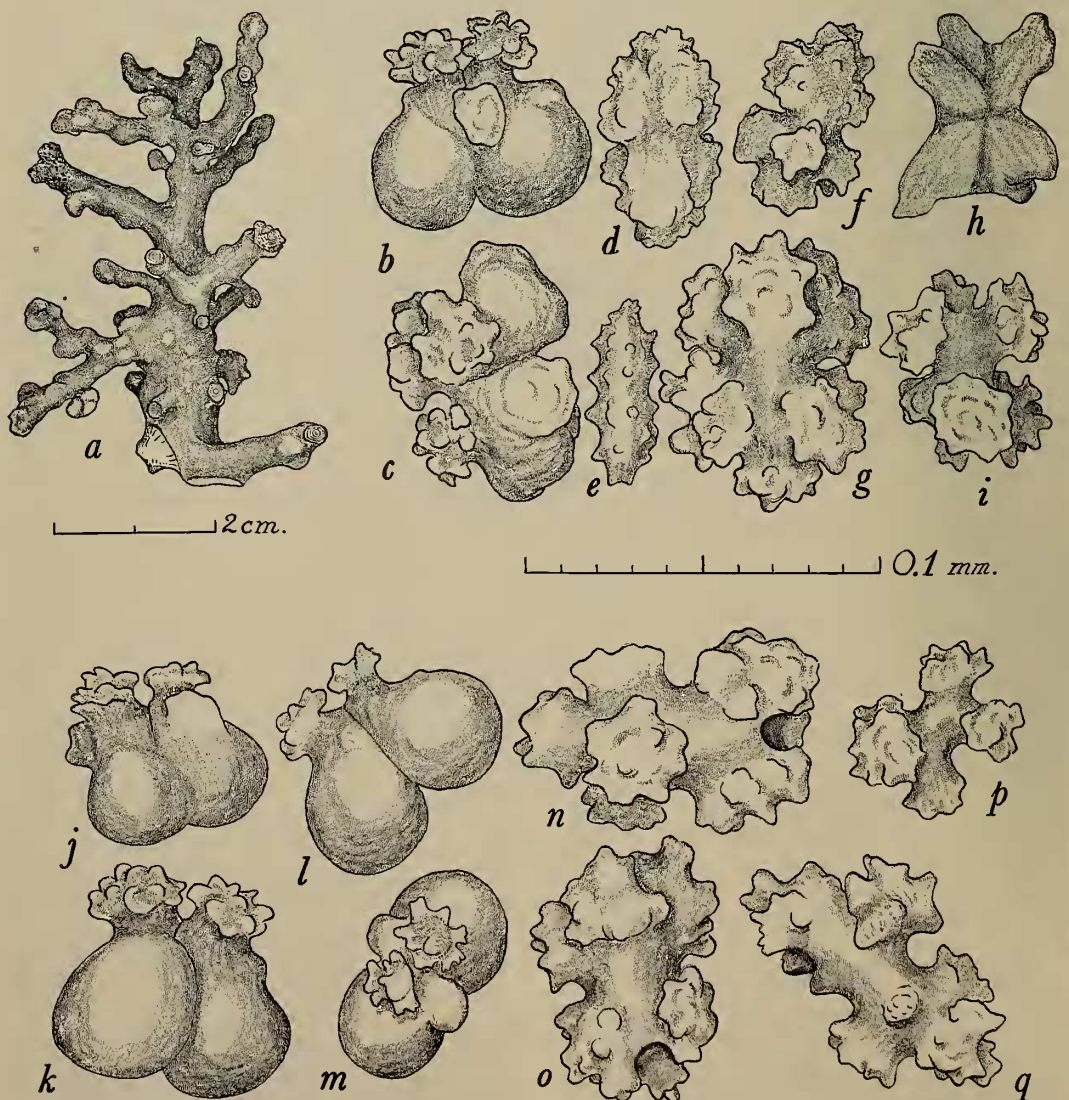


Fig. 1.—*Corallium borneënse*, n. sp.: *a*, Entire specimen; *b–i*, spicules from autozooid calyx; *j–q*, spicules from the coenenchyma.

on the basis of macroscopic features into four groups. (1) Those with the autozooids recessed into deep pits in the calcareous axis (e. g., *C. stylasteroides* Ridley). (2) Those with evenly distributed low, wart-like verrucae not appreciably recessed into the axis (e. g., *C. elatius* Ridley). (3) Those with high, tubular, sulcate calyces not recessed into the axis (e. g., *C. sulcatum* Kishinouye). (4) Those with rather large, dome-like verrucae often clustered in groups and also not set into the axis (e. g., *C. kōnojōi* Kishinouye). The new species just described falls into the fourth group, and except for the manner of branching is similar in appearance to *Corallium kōnojōi*. Microscopically the latter differs greatly in the predominance of sexradiates, the more irregular double clubs, and the presence of autozooids only on the "front" surface of the colony.

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## SCIENCE PUBLICATION.—*Microfilms as publication.*[1]

G. Winston Sinclair, University of Michigan. (Communicated by Richard E. Blackwelder.)

In June 1948 Aurèle La Rocque was graduated by the University of Michigan, doctor of philosophy in geology. Immediately after his graduation his doctoral thesis, *Pre-Traverse Devonian pelecypods of Michigan*, was sent (in accordance with the regulations of the Graduate School) to University Microfilms, a private organization located in Ann Arbor. They prepared a microfilm negative of the thesis and returned the typescript to the University Library, where it is preserved. A copy of the microfilm was sent to the Library of Congress, which catalogued it and distributed cards to depository libraries. Copyright was secured, in La Rocque's name. University Microfilms then distributed, as pages 116–117 of their *Microfilm Abstracts*, volume 8, part 2, an abstract of the thesis (prepared by La Rocque) and announced that copies of the complete thesis, identified as "University Microfilms Publication 1059," could be purchased from them at $2.88.

In this thesis La Rocque describes three new genera and 14 species of pelecypods. Are these names to be considered published in zoological nomenclature?

I have chosen this example to illustrate a situation that is becoming more common and on which taxonomists should have some agreed policy. The scope of the problem is indicated by the fact that the one agency mentioned, University Microfilms, has already "published" over 1,400 theses, originating in 14 colleges and universities. Most of these do not deal with zoological subjects, but some do, and more may be expected to be added each year. In order to provide background for intelligent discussion, it might be well to go into some of the details of procedure in microfilm publication.

*Availability.*—The test applied in deciding whether printed material has been validly published is: Are the results available to other workers? Two considerations arise here. The question of literal availability is easily answered. Any library or individual may purchase La Rocque's paper for $2.88, with no restriction on use or citation, apart from that implied in the fact that it is copyrighted. Availability, however, also implies

[1] Received October 10, 1949.